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BACK INJURY PREVENTION: A LITERATURE SURVEY AND COMPENDIUM OF PROGRAMS AND RESOURCES

Prepared by Judith E.M. Evans, Ph.D.
Based on a study
Conducted by Peter D. Holt, Ph.D.
Under contract to the Research Branch

Alberta
WORKER'S HEALTH, SAFETY
AND COMPENSATION
Occupational Health and Safety Division

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EXECUTIVE SUMMARY

This report, which deals with the topic of work-related back injury prevention, consists of two parts.

Part I reviews the literature on back injury prevention strategies. Strengths and weaknesses of the major approaches to preventing back injuries, namely, *pre-employment screening*, *worker training*, and *job modification*, are discussed. The results of a limited number of evaluations of back injury prevention programs are described and the need for further study of the effectiveness and cost-effectiveness of preventive approaches, alone and in combination, is emphasized.

Part II presents brief summaries of the work-related back injury prevention programs sponsored by organizations in Alberta. In addition, a list of resources of potential interest to individuals involved in developing and delivering programs in this area, is provided.

INTRODUCTION

Injuries to the back represent a serious occupational health and safety problem in Alberta. A recent statistical report by Gibeau (1982) indicated that back injuries accounted for over 20% of the lost time claims accepted by the Alberta Workers' Compensation Board (WCB) in the years 1974 to 1980, and that the cost of back injury claims rose to approximately 25% of all claims costs over this period. Despite the high frequency and cost of work-related back injuries, a literature review by Holt (1983) was unable to find sufficiently strong research evidence to draw any definitive conclusions about the causes of work-related back injuries.

The present study was undertaken to identify potentially effective methods for preventing work-related back injuries as well as to document current Alberta programs (and the resources used by these programs) aimed at back injury prevention.

The methods used to obtain information for the study included a literature survey and informal contacts with persons involved in delivering back injury prevention programs. Information obtained from contact persons was used to compile a compendium of back injury prevention programs and resources which appears at the end of this report.

The majority of the information contained in this report was gathered by Peter D. Holt, Ph.D., under contract to the Research Branch of the Occupational Health and Safety Division.

This version of the report was written by Judith M. Evans. The assistance of Lynn Hewitt, Iris Sulyma, Darlene Johnson, and Debbie Anker in preparing and editing the manuscript is gratefully acknowledged.

PART I: LITERATURE SURVEY

Back Injury Prevention Strategies

A recent survey and review of the literature identified three major approaches to back injury prevention: pre-employment screening, training, and job modification (Ayoub, 1982 a, b, c, d; Yu, Roht, Wise, Kilian, and Weir, 1984). This discussion will categorize and very briefly describe a number of different back injury prevention strategies according to these major approaches. (It should be recognized, however, that back injury prevention programs often employ more than one of these strategies).

Pre-employment Screening

The pre-employment screening approach focuses on selection of the worker to fit the work environment. The objective of this approach is to prevent the placement of a worker who is likely to experience a back injury in an environment which is likely to place a high degree of stress on the back (e.g., a heavy manual materials handling job).

There are a number of different techniques that have been used to screen workers for potential back problems. These include x-rays, medical examinations and/or histories, strength and/or physical fitness testing, job simulation and rating methods. Chaffin (1982) has outlined five general factors to be considered in evaluating specific assessment devices: 1) is the technique safe to use? 2) does it give reliable, quantitative results? 3) is it related to specific job requirements? .4) is it practical to use?; and 5) does it predict future injuries or problems?

X-rays. Although pre-employment X-ray screening is still used by approximately 16% of American companies polled in a recent survey (AOMA, 1982) the use of X-rays in terms of their potential to detect back problems has been criticized in the literature. Montgomery (1976) for example, concludes that X-rays have no predictive power beyond that found with medical examination and medical history. Furthermore, there is concern about the safety of exposing individuals to excessive numbers of X-rays and whether the results of X-ray examinations can be related to specific job requirements.

Medical examination and history. Since back problems are often recurrent (see Holt, 1983), this technique would at least *seem* to be an effective prevention strategy. However, the value of medical history data depends partly upon job applicant memory and honesty. Also, physicians vary in the types of information they gather and the type of diagnostic procedures used, which may lead to divergent results. Studies which examine the predictive power of specific types of medical information in specific job situations are lacking.

Strength and physical fitness testing. Strength testing assumes that there is "a direct relationship between the probability of injury and the percentage of strength capacity utilized by the worker in his job" (Ayoub, 1982 d). There is considerable evidence that people with back problems are generally weaker in the abdomen and back but this may be a result, not a cause, of the problem. Although a number of studies have been performed by Chaffin and his co-workers (e.g., Chaffin & Park, 1973; Chaffin, Herrin & Keyserling, 1978; Chaffin, Herrin, Keyserling & Foulke, 1977, Keyserling, Herrin, Chaffin, Armstrong & Foss, 1980), none have shown conclusively that strength screening programs reduce the incidence of back problems (see Holt, 1983 for a more detailed review). This may be partly due to the fact that strength testing does not take into account the repetitive nature of most industrial tasks and the possible confounding influence of physiological expenditure over time. Because the exact nature of the empirical relationship between static strength (often measured in strength tests) and dynamic strength is not yet clear, Ayoub (1982c) further questions the predictive value of strength tests.

As an alternative (or in addition) to strength testing, a worker's physical fitness can be tested. Imrie (1983) has proposed that the fitness of those muscle groups thought to be most closely related to the probability of a back injury should be assessed. Ayoub (1983c) recommends an elaborate screening program that uses objective measures of both the applicant's endurance and strength as well as the demands of the job.

Unfortunately, none of the physical fitness testing strategies have yet been adequately evaluated. One program with a complex measure of physical fitness (Cady, Bischoff, O'Connell, Thomas & Allan, 1979) reported that physically fit workers did incur fewer back problems than their less fit counterparts, but a number of relevant factors (e.g., worker's age and previous medical history) may have been confounded with physical fitness in this study.

Teniswood (1984) is currently conducting an investigation into the relationship between results of pre-employment health screening for musculoskeletal strength and mobility, job placement, and on-the-job back injuries among employees at Mount Isa Mines Ltd. in Queensland, Australia. The screening test used is based on the work of Kraus (1967). Teniswood notes that it is difficult to conduct such research as a considerable amount of time is required to obtain a large enough study sample to ensure the validity of the statistical analyses.

Job simulation. This approach involves measuring various aspects of the applicants' performance and physiological responses in a simulation of the real job. An obvious shortcoming of this approach is its expense. Furthermore, this approach has apparently never been empirically evaluated with regard to its effectiveness in reducing back injuries (Ayoub, 1982c).

Rating methods. These methods involve independent ratings of the applicant's capacities and the capacities required to perform the job. Currently, there are at least two such methods in use: the GULHEMP and the Hanman (1959) methods, which are outlined briefly in Ayoub (1982b). These methods are appealing in that they attempt to match the applicant's work capacity to a specific work task. However, they share a common weakness in that they are based on the rater's subjective impressions (which may or may not be reliable and valid). Neither method has been been empirically demonstrated to reduce back problems.

Summary. All pre-employment screening approaches have a common assumption, namely, that particular people are better equipped than others to handle the biomechanical and/or physiological expenditure associated with particular jobs. Unfortunately, there has been little effort devoted to empirically confirming the validity of this assumption. Several of the techniques (i.e., x-rays, medicals, and ratings) rely heavily on clinical interpretation or subjective judgment and hence may not provide sufficiently reliable information. Other techniques (i.e., strength and physical fitness testing and job simulation) utilize more objective and quantifiable measures but it is unclear whether these measures actually predict the likelihood that a given individual will experience a back injury.

Training

The training approach focuses on teaching the worker (and/or supervisor) strategies for performing the job in such a way as to avoid or minimize the probability of a back injury. Industry generally views training as an attractive countermeasure because, in comparison to other techniques, it is considered to be inexpensive and easy to implement (Ayoub, 1982). Three strategies that are commonly included as part of training programs are training in lifting, training in posture, and training in physical fitness.

Lifting. The method of lifting most commonly advocated in worker training programs is the "squat lift" (bent knees, straight back). The rationale for promoting the squat lift is that it is less stressful on the back than the "stoop lift" (bent back) method.

However, available evidence on this point is contradictory. In support of the rationale, Dehlin and Jaderberg (1982) found that *perceived* exertion was less for squat lifts than stoop lifts. In contrast, Andersson, Ortengren, and Nachemson (1978), found that differences in abdominal pressure between these lift types was minimal in relation to the combined effects of object weight and object position on abdominal pressure, and that the two methods produced approximately equal intra-diskal pressures and muscular activity. Furthermore, other research suggests that the squat lift may actually be associated with greater physiological expenditure (Garg and Saxena, 1979) and greater stress on the knees (NIOSH, 1981).

Holt (1983) concluded that there is little empirical basis for recommending one method of lifting over another, unless other characteristics of the lifting task (e.g., object weight, lift frequency, object stability, horizontal distance between the object to be lifted and the feet, vertical distance of the lift, starting position of the lift, and presence versus absence of object handles) are also considered.

Posture. "Proper" posture (e.g., use of the pelvic tilt) is often included as an element in training programs because it is assumed that posture affects mechanical stress on the back and/or the amount of exertion required to perform various tasks.

Holt (1983) concluded that there was supporting evidence for the existence of a relationship between posture and mechanical stress as well as for the view that working posture may be related to back pain. However, whether there is a "best" working posture that can be used in all situations is uncertain. Many back problems seem to be related to the maintenance of a static work posture but again, there appear to be no research data to aid in assessing how frequently posture should be varied to reduce the probability of back problems.

Physical fitness. By improving the worker's physical condition (e.g., strength, flexibility, and endurance), it is assumed that a reduction in back injuries will occur. Unfortunately, there is little in the way of direct evidence to support this assumption. As noted previously,research findings indicate that people with back problems tend to have weaker abdominal muscles than people without back problems, but it has not been determined whether this situation is a cause or an effect of the problem. Authors such as Hall (1980 a, b) and Imrie (1983) propose a number of specific exercises for strengthening muscle groups involved in manual materials handling, but do not present research evidence in support of the effectiveness of these exercises.

Chronic pain management programs. These programs are not aimed at primary prevention of back injuries. Nevertheless, chronic pain management programs (such as the program currently being run by the Alberta WCB) do involve worker training and are thus conceptually related to prevention approaches. Programs aimed at teaching the individuals to manage pain recognize that the pain associated with many back injuries can be voluntarily controlled to some extent by the injured person (see Blackwell, 1981). Linton (1982) concludes that although there has been no single adequate evaluation of techniques such as biofeedback for reducing chronic pain, there is some evidence of positive results. If some chronic back problems are difficult to avoid, chronic pain management schools may represent an important technique to use in conjunction with "front-end" prevention programs.

Evaluation of worker training programs. Training programs aimed at reducing back injuries share three implicit assumptions: 1) The training program is effective in teaching the worker the desired behaviors (e.g., proper posture, proper lifting techniques, and/or proper exercises for strengthening important muscle groups). 2) Having learned the proper behaviors, workers are motivated to apply the behaviors to the actual job setting. 3) The resultant change or improvement in workers' behaviors leads to a reduction in back injuries.

The success of any training program can be evaluated against all three criteria; however, a program's performance against the third criterion in terms of actual reductions in the frequency or cost of back injuries is the most convincing evidence of its effectiveness. The literature suggests, however, that there have not been enough well-designed evaluations of training programs to permit conclusions regarding their overall usefulness or the usefulness of their individual components.

One of the few quantitative studies of a training program (that was not combined with other prevention strategies) was conducted by Bergquist-Ullman and Larsson (1977). The program studied was a "back school", a program aimed primarily at the rehabilitation and prevention of future injuries in persons who already have back problems. The evaluation showed that, for back school patients as compared to control patients, there was a reduction in the duration of symptoms during recurrences of back problems. The researchers attributed this result to the informational aspects of the back school although other factors such as the school patients' motivation to avoid reinjury may have also contributed to this result. (It is not clear whether a worker who had never received a back injury would be as motivated to use the information on how to avoid a future back injury as the previously-injured patients in this study).

Summary. Training programs that focus on back injury prevention are based on the assumption that a change in the worker's behavior (e.g., lifting technique, posture, amount or type of physical activity) will reduce the worker's risk of incurring a back injury. Training programs may appeal to employers because of their *apparent* low cost in comparison to other preventive strategies. However, a need exists for well-controlled research to determine whether such programs work under the conditions and in the manner in which they have been implemented (Yu et al., 1984).

To properly evaluate training programs, training should be given on an ongoing basis and measurement techniques should be devised in order that initial learning of behaviors, continued performance of behaviors in the workplace, and impact of behaviors on the frequency and cost of back injuries all can be assessed. In this regard, an approach to implementing and evaluating a program similar to that used by Komaki, Barwick, and Scott (1979) might be used. This program was based on behavior modification principles (i.e., continuous monitoring of behavior in the workplace and the provision of positive feedback for performance of the designated safe behaviors).

Job Modification

The job modification approach, also known as the ergonomic approach, focuses on the interaction of the worker and the work environment. Proponents of this approach (e.g., Arndt, 1982) maintain that too much emphasis is put on training the worker. The aim of job modification is to minimize the risk of injuries by implementing engineering and administrative controls in order to design the hazard out of the job. Ergonomists rely on information from experimental work in the areas of biomechanics, physiology, and psychophysics to derive principles for modifying the job in an effort to prevent back injuries (Ayoub, 1982b; Nicholson, Davis, and Pimble, 1983; NIOSH, 1981).

Engineering controls. The NIOSH publication, Work Practices Guide for Manual Lifting (1981), gives a number of principles for engineering controls geared toward reducing the incidence of back problems. These include principles for container design, container handle design, footing, lighting, temperature, and materials handling apparatus. Ayoub (1982c) covers much of the same material using a tabular presentation of the information.

Engineering controls have been criticized because they often (but not invariably) involve a large capital outlay on the part of the employer. Furthermore, despite some indirect evidence relating the physical demand of jobs to the incidence of back problems (e.g., Snook,Campanelli, and Hart, 1978), there is a lack of published studies which clearly demonstrate the impact of engineering controls on back injuries. Arndt (1982) suggests that the engineering control approach has generally not been widely used, accounting to some extent for the absence of evaluations in the literature.

Administrative controls. Administrative controls or guidelines can be used when hazards cannot be engineered out of the job. NIOSH (1981) also provides administrative guidelines on the amount of weight to be lifted, lift frequency, and lift starting height. These guidelines, in the form of "action limits", are considered to be safe for 90% of the male workforce and 75% of the female workforce. "Maximum limits", which are said to be safe for only 25% of the male workforce and less than 1% of the female workforce, are also given.

The NIOSH guidelines are subject to a number of limitations. First, they do not take into account many variables (e.g, total task duration over the work day, object size, object shape, and load stability) which affect lifting capacity (Mital, 1980). Second, they are further restricted to physically fit manual labourers who are using two hands to lift objects with handles straight upwards in a plane directly in front of the body. Finally, the guidelines are presented in technical terms which might make them difficult for employers and workers to comprehend and implement. (A brief summary of the NIOSH guidelines is given by Konz (1982).)

Another set of administrative guidelines for materials handling tasks were published by the Materials Handling Research Unit (MHRU), University of Surrey. The MHRU guidelines are based on peak abdominal pressures of 90 mm Hg. Although they apply to a wider range of tasks than the NIOSH guidelines (e.g., they include one and two-handed pushes, pulls, and lifts), they also fail to take into account a number of factors which have been related to lifting capacity. The MHRU guidelines are published as a series of diagrams which are easier to interpret than the NIOSH (1981) guidelines, but may still be difficult for the layperson to use. No studies which empirically evaluated either set of guidelines were found in the literature.

Summary. Like the worker training approach, the job modification approach assumes that minimization of biomechanical stress and/or physiological expenditure will reduce the probability of back injuries. A potential advantage of job modification is that its impact presumably does not depend on the worker learning and continuing to practice particular behaviors. A disadvantage is the initial capital outlay that may be required (both for job analysis by a specialist and for new equipment or other changes to the workplace which might be necessitated by engineering controls).

Combined Approaches

While there is little available information on the effectiveness of back injury prevention programs employing single approaches or strategies, three studies which examined the effectiveness of two or more combined approaches were identified.

Glanville and Caldwell (1980) studied the changes in work absences of three or more days duration attributed to low back pain following job modification and introduction of training in manual materials handling techniques in a British chemical manufacturing plant. These investigators report a significant decrease in the number and duration of back-related work absences following introduction of the program.

Tomer, Olson and Lepore (1984) describe the implementation and evaluation of a back injury prevention program for reprographics and maintenance employees at the Lockheed missiles and space facility in Sunnyvale, California. Prior to developing the program, the investigators spent over 80 hours observing line employees in these departments in order to identify the existence and nature of back injury hazards related to work organization and behaviors which could potentially be modified. Once these "focal points" of training were isolated, three distinct training programs aimed at different groups of workers were developed.

Before presenting these programs to workers, preview sessions were held with management to familiarize them with workplace back injury hazards and proposed ergonomic solutions, and to acquaint the program instructor with possible problems that might be encountered in program delivery.

In the initial training session, employees were given one hour of instruction which included the following topics: anatomy, physiology, and kinesiology of the back (in layperson's terms); posture; importance of maintaining an adequate level of physical fitness (including a fifteen-point exercise program); discussion of work practises and body positions found in the individual work areas; and discussion of off-the-job situations having the potential to cause back injuries. Fifty-eight groups of approximately 20 to 25 employees were trained in their usual work areas.

About seven months following initial training, a refresher session was conducted in the employees' work areas at regularly scheduled safety meetings. Besides briefly reviewing the original class, the refresher session covered the role of nutrition, an introduction to stress management, and additional information on physical fitness.

When data were compared for the two fourteen-month intervals prior to and after the introduction of the program, a 77% reduction in paid costs relating to back injuries to date was observed. There was also a 57% reduction in the estimated total claim costs and a 76% reduction in costs per claim.

Teniswood (1984), reports that the program that he has implemented at Mount Isa Mine (a large metalliferous mining operation employing nearly 6,000 workers) has resulted in a 50% reduction in back injuries and a net associated cost saving of $157,000 for the 1982/83 fiscal year.

The Mount Isa Mine program is described as consisting of six components: problem identification; personnel screening; work orientation and conditioning; post-injury management; training and education; and engineering. Problem identification involves monitoring of all back and neck injuries and follow-up with persons who have received first aid or medical attention for these injuries, as well as monitoring of workers and supervisors' reports of needed job improvements. As noted previously, personnel screening is conducted using a test for musculoskeletal strength and mobility. Work orientation and conditioning involves a graded and controlled introduction or reintroduction to jobs. Workers are shown how to warm up while working by such practises as handling the smallest boxes first. Post-injury management strategies include prompt treatment at the first sign of back injury and a back school for workers with chronic back problems.

Training and education is targeted at three groups: workers, line managers and supervisors, and support services staff such as engineers and purchasers.

The training course for workers consists of a three-session manual materials handling course. Fourteen different hands-on, job-specific introductory training sessions have been designed for the fourteen divisions in the company. According to Teniswood (1984), "training deals with lifting, storage of materials, shoveling, sledge hammering, etc. It also covers aspects such as treatment for muscular injury, and company facilities available to improve jobs and equipment (like ergonomics services). Positive job behavior, not threat of injury, is stressed. A second later session is given for each shift and each job. It is similar to the above. A reinforcement session is given after about 12 months. These latter sessions also include the older, experienced workers to ensure total coverage".

Line management receives similar instruction, with additional material presented on work organization and materials storage and transfer, as part of a two-day accident prevention course. Support services personnel receive a two-day ergonomics course in an effort to prevent new work design problems from being created (e.g., by purchase of new equipment which is poorly designed from an ergonomics perspective).

The Mount Isa Mine company magazine (Mimag, 1983) provides several examples of the final component of the back injury prevention program: engineering (ergonomics services). For example, the company has switched from 40 kg. to 20 kg. cement bags. Materials and equipment such as planks, ladders, pipe bearers, and rock drills have been replaced with lighter versions of equal strength. More materials are now being handled in bulk, using pallets and hoisting mechanisms. Finally, a better seat suspension system, which reduces vibration and seat bounce, has been developed for company trucks.

Approaches to Back Injury Prevention: Concluding Remarks

The occupational health and safety literature reveals three general approaches to back injury prevention - pre-employment screening, worker training, and job modification - as well as a number of strategies associated with each approach. Very few studies provide any evidence concerning the relative effectiveness of these approaches. The studies reviewed which touched on the issue of the effectiveness (or costs and benefits) of back injury prevention programs all focused on programs which used a combination of approaches (e.g., training and job modification - Glanville and Caldwell (1980), Tomer, Olson, and Lepore (1984); worker screening, training, and job modification - Teniswood (1984)). Further research is needed to determine whether the findings of these studies generalize to back injury prevention programs in other industries. In addition, there is a need to determine which of the approaches (and their associated strategies) are most effective and cost-beneficial, and whether the success of some approaches is enhanced by the concurrent implementation of others (e.g., whether training the worker is more effective at reducing back problems when combined with job modification).

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PART II:

COMPENDIUM OF BACK INJURY PREVENTION PROGRAMS AND RESOURCES

A. BACK INJURY PREVENTION PROGRAMS IN ALBERTA

The following program descriptions were compiled by Peter D. Holt under contract to the Occupational Health and Safety Division during April, 1983. Organizations having back injury prevention programs were identified with the assistance of Workers' Health, Safety and Compensation staff and members of the Alberta Association of Occupational Health Nurses. An organization's program has been included in the listing if the contact person indicated that the organization's back prevention activities constituted a formal program. Thus there may be a considerable amount of variability in the elaborateness of the following programs and some may actually be less extensive than the back prevention activities of organizations which reported that they did not have formal programs. (Several of the latter did report that they occasionally show films related to back injury prevention in their safety meetings).

All of the listed programs include educational packages and generally rely on lectures and audiovisual materials as the main presentation strategies.

As specific details of programs are presented in summary form and may have changed since this listing was compiled, it is suggested that interested persons contact the organizations directly for additional information.

Organizations interested in including or updating a description of their back injury prevention programs in future versions of this compendium are asked to contact the Research Projects Coordinator, Research Branch, Occupational Health and Safety Division, 10709 - Jasper Avenue, T5J 3N3, phone 427-8943.

ORGANIZATION	Alberta Personnel Administration Office Occupational Health Services 3rd Floor, Kensington Place 10011 - 109 Street Edmonton, Alberta T5J 3S8
Contact Person	Harriet Ferrari Manager, Occupational Health Services
Telephone	427-4416
Industry	Provincial government
Type of Program	Educational package
Frequency	Yearly (short follow-up at three months).
Duration	One and one quarter to two hours
Target Groups	Provincial government employees, with emphasis on the ten occupational groups at greatest risk.
Special Emphasis for Specific Target Groups	Yes
Roles/Responsibilities	*Employer.* Delivers package as part of an overall safety program. *Workers.* Voluntary attendance at program encouraged by management. *Union.* None. *Health care professionals.* Occupational health nurses deliver program. Medical consultant advises on content. *Safety professionals.* Input into content and some participation in delivery. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, two- or more - person lifts, avoidance of twisting, role of abdominal muscles. Format: lecture, film, demonstration, model, handouts, participation. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, film, model, booklet. *Promotion of warm-up.* Yes.

Promotion of physical fitness. Includes emphasis on: back, abdomen, legs, diet. Format: lecture, film, demonstration, handouts.

Ergonomic design of workplaces. No, but accident investigations look at workplace design and recommend changes if appropriate, and the educational program discusses potential problem spots with workers.

Promotion of use of lifting devices. Need for lifting devices in certain situations is covered.

Pre-placement screening. No.

Administrative guideline. (Weight, size of objects to be lifted). Not referenced in educational package.

Posture. Includes lying, sitting, standing, pelvic tilt.

Pain management. No.

Emotional factors. Yes.

Light Duties Program

No overall policy but individual departments may follow doctor's restrictions.

Evaluation Studies

None to date.

Monitoring of Injuries

Yes.

Self-Reported Strengths of Program

General enough to fit all types of occupations. Flexible enough to be adaptable to specific situations. On-site delivery.

Self-Suggested Areas Needing Improvement

Need to get on-site supervisors committed to prevention and knowledgeable enough to reinforce what is taught.

Advice to Other Programs

Program should be general enough that it can be adapted to specific tasks and settings by each person delivering the program. On site follow-up is very important.

Films Used	*The Working Back: Parts I and II.* *Make Light of Lifting.* *Mind Your Back.* *A New Way to Lift.* *Oh! My Aching Back.* *Bend Your Knees.* *Balance in Lifting.*
Pamphlets, Booklets	*The Lifting Back (Back Care Centre).* *The Working Back (Back Care Centre).* *Your Back and You (Scriptograph).* *Preventing Backache (Metropolitan Life).*
Major Resources	Dr. Hamilton Hall Workshop. *The Back Doctor (Hall, 1980).* Occupational Health and Safety Division Medical Consultant. Personal experience and education in the field. Back Care Centre. Krames Communications.

ORGANIZATION	Alberta Social Services & Community Health Occupational Health & Safety 12th Floor, South Tower Seventh Street Plaza 10030 - 107 Street Edmonton, Alberta T5J 3E4
Contact Person	Joe Perkins, Program Supervisor.
Telephone	427-7762
Industry	Provincial government
Type of Program	Educational package. (Contact person emphasizes that the program is part of an overall safety program and depends on the success of the overall program).
Frequency	Two sessions bi-yearly
Duration	First session, four hours; second session, two hours.
Target Groups	Social Services and Community Health employees (e.g. institutional aides, nurses, child care staff, storekeepers, transport workers, and clerical staff).
Special Emphasis for Specific Target Groups	No
Roles/Responsibilities	*Employer.* Delivers package as part of overall safety program. *Workers.* Mandatory attendance. *Union.* None. *Health care professionals.* None. *Safety professionals.* Serve as instructors. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: lecture, film, demonstration, participation. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, film slide -tape, model booklet. *Promotion of warm-up.* No.

Promotion of physical fitness. Includes emphasis on: back, abdomen, diet. Format: lecture, film, demonstration, handouts, fitness test.

Ergonomic design of workplaces. No, but accident investigations look at workplace design and recommend changes if appropriate.

Promotion of use of lifting devices. Not as part of the back program although lifting devices are used.

Pre-placement screening. No.

Administrative guidelines (weight, size of objects to be lifted). No.

Posture. Includes lying, sitting, standing, pelvic tilt.

Pain management. No.

Emotional factors. No.

Light Duties Program	None, but one under consideration.
Evaluation Studies	None.
Monitoring of Injuries	Yes.
Self-Reported Strengths of Program	Simple message. Personal approach.
Self-Suggested Areas Needing Improvement	None, program in testing stage.
Advice to Other Programs	Back care must be part of overall safety program. You must emphasize worker's responsibility for her/himself.
Films Used	*The Working Back: Parts I and II.* *Back at Work (Ontario Chiropractors Association).*
Other Audio-Visual Resources	Slides from Seba Pharmaceutical.
Pamphlets, Booklets	*The Lifting Back (Back Care Centre).* *The Working Back (Back Care Centre).*
Major Resources	Program of the Back Care Centre. *The Back Doctor (Hall, 1980).*

ORGANIZATION	Alberta Occupational Health & Safety Div. Education & Program Development Branch Southern Region 1021 - 10 Avenue S.W. Calgary, Alberta T2R OB7
Contact Person	Carol Eamer, Education Officer
Telephone	297-7282
Industry	Provincial government
Type of Program	Educational package given upon request.
Frequency	Upon request.
Duration	One hour.
Target Groups	Depends upon request from workers or employers. Has included meat packing industry and supervisors of caretakers in the public school system.
Special Emphasis for Specific Target Groups	Yes.
Roles/Responsibilities	*Government* Developed program, delivers program. *Employer.* Supplies time of workers. *Workers.* Depends upon nature of request. Voluntary or mandatory attendance. *Union.* None. *Health care professionals.* Physician and occupational health nurse have input into development and delivery. *Safety professionals.* None (other than Education and Program Development Branch staff). *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: lecture, film. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, film. *Promotion of warm-up.* Yes, talks about warm-up but does not give specific exercises.

Promotion of physical fitness. Includes emphasis on: back, abdomen, legs, diet, aerobics. Format: lecture, film, booklets, test for abdominal strength.
Ergonomic design of workplaces. No.
Promotion of use of lifting devices. In a general way, suggests using mechanical devices wherever appropriate.
Pre-placement screening. No.
Administrative guidelines (weight, size of objects to be lifted). No.
Posture. Includes lying, sitting, standing, pelvic tilt.
Pain management. Only to extent of suggesting heat packs to ease discomfort where appropriate.
Emotional factors. No.

Light Duties Program No.

Evaluation Studies None.

Monitoring of Injuries No.

Self-Reported Strengths of Program
Program increases worker awareness. Citing back injury statistics increases impact. Emphasizes simple ways to avoid problems.

Self-Suggested Areas Needing Improvement
Need to develop follow-up presentation. Need to have quantitative evaluation.

Advice to Other Programs
Need follow-up presentation. Need good presentation style.

Films Used *The Working Back: Parts I and II.*

Pamphlets, Booklets *Don't Strain Yourself.*

Major Resources *The Back Doctor (Hall, 1980).*
Review of literature and other programs.
Personal experience and education in field.

ORGANIZATION	Alberta Occupational Health & Safety Div. Education & Program Development Branch Northern Region 9321 - 48 Street Edmonton, Alberta T6B 2R4
Contact Person	Education & Program Development staff.
Telephone	427-4788
Industry	Provincial government
Type of Program	Educational package given upon request.
Frequency	Upon request.
Duration	One half to two hours.
Target Groups	Depends upon request, has included oil industry and medical care industry.
Special Emphasis for Specific Target Groups	Yes.
Roles/Responsibilities	*Government* Developed program, delivers program. *Employer.* If aimed at workers, supplies time of workers. If aimed at management, supplies management time. Management may then deliver program to workers. *Workers.* Depends upon nature of request. Voluntary or mandatory attendance. *Union.* None. *Health care professionals.* Occupational health nurse may be involved in program delivery. *Safety professionals.* May be involved in program delivery. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen, group lifting. Format: lecture, demonstration, slides, film. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, film, slides, model.

Promotion of warm-up. Yes, talks about warm-up but does not give specific exercises.
Promotion of physical fitness. Includes emphasis on: back, abdomen, legs, diet. Format: lecture, booklets, slides, film.
Ergonomic design of workplaces. If the program is aimed at management, the instructor will talk about designing or re-designing workplaces.
Promotion of use of lifting devices. Yes.
Pre-placement screening. Yes, mentioned at management level.
Administrative guidelines (weight, size of objects to be lifted). No.
Posture. Includes lying, sitting, standing, pelvic tilt.
Pain management. No.
Emotional factors. No.

Light Duties Program Might mention usefulness to supervisors.

Evaluation Studies None.

Monitoring of Injuries No.

Self-Reported Strengths of Program
Looks at specific worksites. Where possible uses statistics from company to emphasize scope of the problem. Attempts to keep personal contact.

Self-Suggested Areas Needing Improvement
Need more and better audio-visuals.

Advice to Other Programs
Need to educate management. Target program for specific situation. Need follow-up presentation. Need evaluation.

Films Used *The Working Back: Parts I and II.*

Other Audio-Visual Slides (Edmonton General Hospital).

Pamphlets, Booklets *Don't Strain Yourself.*

Major Resources *Creating a Back Awareness Program (Ontario Hospital Association).*
Review of back literature. Personal experience and education in field.

ORGANIZATION	Alberta Workers' Compensation Board Rehabilitation Centre 7123 - 119 Street Edmonton, Alberta T6G 1V7
Contact Person	Gwen Crossman, Remedial Gymnast Elizabeth Nash, Occupational Therapist
Telephone	434-3441
Industry	Provincial government board. (Program aimed at all industries).
Type of Program	This program is partly rehabilitative but does include a preventive component particularly in relation to preventing re-occurrences. It has been given off-site to various target groups as a prevention program with no rehabilitative component. The on-site program currently consists of two educational packages, one given every Tuesday for two hours and one given one half hour per day for two weeks. The program is currently being revised to consist of a single educational package of one hour per day for five days. It is currently delivered by a remedial gymnast and an occupational therapist, but with the new formula a psychologist, a physician and a physiotherapist will also have equal input. The exact content of the new program has not been determined but it will have a larger section dealing with pain management. The old program is described in what follows.
Frequency	One component every Tuesday, the other daily for two weeks.
Duration	The Tuesday component for two hours, the daily for one half hour.
Target Groups	All types of workers.
Special Emphasis for Specific Target Groups	Yes, try to gear program to type of worker.

Roles/Responsibilities

WCB. Developed and delivers program.
Employer. Cooperation is often sought.
Workers. Mandatory attendance. (Rehabilitation Centre patients assigned to program).
Union. None.
Health care professionals. Delivered by occupational therapist and remedial gymnast. (See Type of Program for planned changes).
Safety professionals. None.
Others. None.

Content

Techniques of lifting. Includes: straight back, bent knees, load close to body, pelvic tilt, two or more person lifts, role of abdomen. Format: lecture, film, demonstration.
Anatomical structure of the body. Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, film skeleton model.
Promotion of warm-up. Yes, there is a brief discussion of warm-up.
Promotion of physical fitness. Includes emphasis on: diet, back, aerobic, abdomen. Format: lecture, film, booklets, demonstration, participation.
Ergonomic design of workplaces. Yes, the occupational therapists may visit worksites to recommend changes.
Promotion of use of lifting devices. Yes.
Pre-placement screening. Yes, the physician and occupational therapist may recommend whether the worker should or should not return to his old job.
Administrative guidelines (weight, size of objects to be lifted). No, except sometimes for specific workers.
Posture. Includes lying, sitting, standing, pelvic tilt.
Pain management. Briefly, and this component will increase.
Emotional factors. Yes.

Light Duties Program

Yes, the occupational therapists and physicians may suggest restrictions on what the person can do. It is up to the employer, union and/or worker to follow through on the suggestions.

Evaluation Studies Yes.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program

Instructors are knowledgeable in back problems. Personal approach. Visits to worksite. Includes informal discussion. Patients can relate to one another.

Self-Suggested Areas Needing Improvement

Need more audio-visual materials specific to Alberta. Need a dietician's participation. Need more manpower. Need to focus more on specific jobs. Need to clarify which of various flexion and extension exercises are the best. Need more good literature to distribute.

Advice to Other Programs

Have good films and booklets. Evaluate program as a pilot program. Have input for an ergonomist and a physiotherapist. Enlist management support.

Films Used

The Working Back: Parts I and II.
Handling Without Risk.

Pamphlets, Booklets

Exercise handout (WCB).
Care of the Back (Lippincourt, 1976 Ed.).

Major Resources

Education and experience in field.
The Back Doctor (Hall, 1980).
Certificate Program in Occupational Safety (Dr. S. Kumar's Presentation).
NOTE: New program will include material from new sources.

ORGANIZATION	City of Edmonton Engineering Department 10517 - 95 Street Edmonton, Alberta T5H 2C2
Contact Person	Gary Fink, Safety Inspector
Telephone	428-5092
Industry	Municipal government
Type of Program	Educational presentation at orientation with some coordination with the safety program in regard to ergonomic aspects of back problems.
Frequency	At orientation.
Duration	One half hour.
Target Groups	All Engineering Department hourly employees including clerical workers and labourers.
Special Emphasis for Specific Target Groups	No.
Roles/Responsibilities	*Employer.* Supplies instructors' and workers' time. *Workers.* Mandatory attendance time. *Union.* None. *Health care professionals.* None. *Safety professionals.* Serve as instructors. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: lecture, film, demonstration, participation. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, demonstration, handouts. *Promotion of warm-up.* Yes. *Promotion of physical fitness.* Includes emphasis on: back, abdomen, legs, aerobics. Format: lecture, demonstration, handouts.

Ergonomic design of workplaces. Not as a formal program but incoming equipment is reviewed in relation to potential hazards to the back and jobs are looked at in relation to job re-design in the event of complaints.
Promotion of use of lifting devices. The department has spent a great deal of money in recent years upon lifting devices for handling awkward equipment.
Pre-placement screening. Yes. mentioned at management level.
Administrative guidelines (weight, size of objects to be lifted). No.
Posture. Includes lying, sitting, standing, pelvic tilt.
Pain management. No.
Emotional factors. No.

Light Duties Program	No, with one or two exceptions.
Evaluation Studies	None.
Monitoring of Injuries	Yes.

Self-Reported Strengths of Program

Changes in workplace design. Good educational aspects.

Self-Suggested Areas Needing Improvement

Spend more time and effort on this area. Have more employee participation. Have an ongoing educational program. Spend more effort in preventing re-occurrences.

Advice to Other Programs

Need to consider worksite factor. Almost any program increases awareness.

Pamphlets, Booklets	*Posture (Ontario, WCB)* *Physical Fitness (Ontario WCB).*
Major Resources	Alberta WCB. Ontario WCB.

ORGANIZATION	Calgary Auxiliary Hospital & Nursing Home District #7 District Office 1070 McDougall Road, N.E. Calgary, Alberta T2E 7Z2
Contact Person	Ruth Zeller, Senior Occupational Health Nurse
Telephone	261-3800
Industry	Health Care
Type of Program	Educational package along with a medical assessment.
Frequency	Orientation. Follow-up information is given during annual safety week.
Duration	One hour.
Target Groups	Employees of the institutions in the District, (e.g., nurses, institutional aides, maintenance workers, dieticians, and clerical staff).
Special Emphasis for Specific Target Groups	Yes, the medical assessment is more strict for jobs requiring lifting.
Roles/Responsibilities	*Employer.* Supplies time of workers and instructors. *Workers.* Mandatory attendance, were consulted in program development. *Union.* None. *Health care professionals.* An occupational health nurse and a physician are involved in the original assessment. A physiotherapist and an occupational therapist are involved in the delivery of the body mechanics section. *Safety professionals.* None. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen, two-man lifts. Format: lecture, film, slides, handouts, demonstration, participation.

Anatomical structure of the body. Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, film, slide-tape, skeleton model, handouts.

Promotion of warm-up. No.

Promotion of physical fitness. Includes emphasis on: back, abdomen, legs, aerobic, diet. Format: Lecture, handouts. There is also a physical fitness class with voluntary attendance which is not part of the regular back care program.

Ergonomic design of workplaces. Yes, the supervisor and a physiotherapist investigate accidents and are empowered to change workplace design.

Promotion of use of lifting devices. Yes, with demonstrations and participation during both orientation and introductions to new equipment.

Pre-placement screening. Yes.

Administrative guidelines (weight, size of objects to be lifted). No.

Posture. Includes lying, sitting, standing, pelvic tilt.

Pain management. No.

Emotional factors. No

Light Duties Program

None.

Evaluation Studies

None.

Monitoring of Injuries

Yes.

Self-Reported Strengths of Program

District wide, standardized program leads to consistency. Involves occupational therapist and physiotherapist.

Self-Suggested Areas Needing Improvement

Need more audiovisuals.

Advice to Other Programs

Back care must be part of overall safety program. Workers should be involved in program development.

Films

You and Your Back (Rockyview Hospital, Calgary).

Pamphlets, Booklets	*Care of the Back (Lippincourt, 1976).*
Major Resources	Experience in orthopaedics and neurology. *The Back Doctor, (Hall, 1980).*

ORGANIZATION	Colonel Belcher Hospital 1213 4th St. S.W. Calgary, Alberta T2R 0X7
Contact Person	Marilyn Easton, Occupational Health Nurse
Telephone	264-1850
Industry	Health Care
Type of Program	Consists of primarily of an educational package which is given at orientation. New nursing staff receive additional training from the Physiotherapy Department on safe patient transfer. Staff returning form absences due to back problems receive additional training from the Physiotherapy Department. The hospital also had a special body mechanics week in 1982 which likely will not be repeated in the near future.
Frequency	Orientation.
Duration	One hour.
Target Groups	Hospital employees, (e.g., institutional aides, nurses, dietary staff, housekeeping staff, and clerical staff).
Special Emphasis for Specific Target Groups	Yes, nurses receive extra instruction from Physiotherapy for safe patient transfer.
Roles/Responsibilities	*Employer.* Supplies time of workers and instructors. *Workers.* Mandatory attendance. *Union.* None. *Health care professionals.* Coordinated by occupational health nurse, delivered by physiotherapist. *Safety professionals.* None. *Others.* Education staff deliver part of program.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen, two-man lifts. Format: lecture, film, model, demonstration. Nursing staff participate in lifting.

Anatomical structure of the body. Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, film, skeleton model

Promotion of warm-up. No.

Promotion of physical fitness. No, although Physiotherapy conducts classes for volunteers in an unrelated program.

Ergonomic design of workplaces. No, but accident investigations look at workplace design and recommend changes if appropriate.

Promotion of use of lifting devices. Only for nursing staff.

Pre-placement screening. Yes.

Administrative guidelines (weight, size of objects to be lifted). No.

Posture. Includes lying, sitting, standing, pelvic tilt.

Pain management. No.

Emotional factors. No

Light Duties Program None.

Evaluation Studies None.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program

Physiotherapist involvement. Good films.

Self-Suggested Areas Needing Improvement

More demonstration and participation.

Advice to Other Programs

Set up active participation.

Films *Balance in Lifting (Colonel Belcher Hospital).*

Major Resources Personal experience and education.
Physiotherapy texts.
How to Treat Your Own Back (MacKenzie, 1978).
Industrial medicine texts.

ORGANIZATION	Edmonton General Hospital 11111 Jasper Avenue Edmonton, Alberta T5J OL4
Contact Person	Phyllis Dell
Telephone	482-8111
Industry	Health Care
Type of Program	Consists of an educational package given at orientation, a special back care program for employees with problems which may be attended by other interested staff, and physiotherapist gives nurse advice on specific lifting problems in-service.
Frequency	At orientation and ongoing.
Duration	One hour for orientation. Back care program is two one-hour sessions for all employees. In-service is for nurses as required.
Target Groups	All hospital employees (e.g., nurses, nursing aides, dieticians, maintenance workers, housekeeping workers, radiological workers).
Special Emphasis for Specific Target Groups	No, there is a basic program for everyone, although the instructor may look at specific tasks for examples.
Roles/Responsibilities	*Employer.* Supplies time of workers and instructors. *Workers.* Orientation is mandatory. *Union.* None. *Medical professionals.* Arranged by occupational health nurse and delivered by the physiotherapist. *Safety professionals.* None. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, role of abdominal muscles. Format: lecture, demonstration, slides, film. The nursing in-service involves participation.

Anatomical structure of the body. Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, slides, skeleton model.

Promotion of warm-up. Not specifically promoted as warm-up but do suggest some stretching exercises to be done daily, preferably in the morning to increase flexibility.

Promotion of physical fitness. Yes, includes emphasis on: back, abdomen, diet, legs. Exercises only suggested in back program but there is also a voluntary fitness class which is not part of the back program.

Ergonomic design of workplaces. No, but accident investigations look at workplace design and recommend changes if appropriate.

Promotion of use of lifting devices. Yes, promotes use of patient hoists.

Pre-placement screening. Yes.

Administrative guidelines (weight, size of objects to be lifted). No.

Posture. Includes lying, sitting, standing, pelvic tilt or extension.

Pain management. No.

Emotional factors. No

Light Duties Program None.

Evaluation Studies None.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program

The nursing in-service deals with very specific situations. Back care program involves small groups.

Self-Suggested Areas Needing Improvement

Need more accountability from staff as to how they got injured. Need more good video materials on patient transfer techniques.

Advice to Other Programs

Get management support.

Films

Low Back Pain
Back Talk (British Columbia WCB).

Major Resources	Experience and education in field. *A Textbook of Orthopaedic Medicine (Cyriax, 1978).* *The Lumbar Spine: Mechanical Diagnosis and Therapy, (MacKenzie, 1982)* *The Back Doctor, Hall (1980).*

ORGANIZATION

Glenrose Hospital
10230 - 111 Avenue
Edmonton, Alberta T5G OB7

Contact Person

Elaine Meighen, Occupational Health Nurse

Telephone

471-2262

Industry

Health Care

Type of Program

Consists primarily of a single program including daily exercise and in-service presentations. Special seminars may be related to the program.

Frequency

Warm-up exercises daily, with first session and various follow-up in-service sessions presenting more educational material.

Duration

Exercise 6 minutes, educational package one half to one hour.

Target Groups

Most nursing units in hospital.

Special Emphasis for Specific Target Groups

No.

Roles/Responsibilities

Employer. Gives employee time and underwrites resource materials.
Workers. Voluntary attendance.
Union. None.
Health care professionals. Occupational health nurse and volunteers from nursing units serve as instructors.
Safety professionals. None.
Others. None.

Content

Techniques of lifting. Includes: straight back, bent knees, load close to body, pelvic tilt, group lifting, role of abdomen. Format: lecture, slides, handouts, overheads.
Anatomical structure of the body. Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, film, model, booklet.
Promotion of warm-up. Includes exercises for back, legs and abdomen from Fitness Canada and other sources (musical accompaniment).

Promotion of physical fitness. Includes emphasis on: back, abdomen, legs, aerobics, diet. Format: Lecture, handouts, fitness test from YMCA.

Ergonomic design of workplaces. No, but accident investigations look at workplace design and recommend changes if appropriate.

Promotion of use of lifting devices. Lecture and help from Physiotherapy in specific incidents.

Pre-placement screening. Yes.

Administrative guidelines (weight, size of objects to be lifted). No.

Posture. Includes lying, sitting, standing, pelvic tilt.

Pain management. No.

Emotional factors. No

Light Duties Program None.

Evaluation Studies None complete, one underway.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program

Worker participation. Voluntary leaders. High morale.

Self-Suggested Areas Needing Improvement

More time and better audio-visuals.

Advice to Other Programs

Keep program simple. Emphasize programs are for own benefit. Need enthusiastic leaders. Need to emphasize overall fitness.

Films

The Working Back: Parts I and II.
Low Back Pain.
Various other OHSD films.

Other Audio-Visual Resources

Hospital's slide shows, and video.

Pamphlets and Booklets

Techniques for Moving Patients.
The Working Back (Back Care Centre).

Major Resources

Articles from literature.
Personal experience and education, Fitness Canada. YMCA.

ORGANIZATION	Medicine Hat & District Hospital 666 - 5th St. S.W. Medicine Hat, Alberta T5J 3N3
Contact Person	Mrs. Birch, Supervisor of Physiotherapy.
Telephone	527-2211
Industry	Health Care
Type of Program	Educational package at orientation and additional education for staff in extended care.
Frequency	Orientation and 2 sessions bi-yearly.
Duration	One half hour for standard orientation and one and one half hours for additional education.
Target Groups	All new employees get orientation (e.g., institutional aides, nurses, dieticians, maintenance workers). Only staff handling extended care patients get bi-yearly package.
Special Emphasis for Specific Target Groups	Yes, bi-yearly package extra for extended care staff.
Roles/Responsibilities	*Employer.* Supplies time of instructor and employees. *Workers.* Mandatory attendance. *Union.* None. *Health care professionals.* Physiotherapist delivers program. *Safety professionals.* None. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: lecture, demonstration, participation. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, skeleton model. *Promotion of warm-up.* No. *Promotion of physical fitness.* Includes emphasis on: back, abdomen, general physical activities. Format: Lecture, demonstration.

Ergonomic design of workplaces. No, tell people to report if workplace design leads to improper lifting.
Promotion of use of lifting devices. Yes.
Pre-placement screening. No.
Administrative guidelines (weight, size of objects to be lifted). No.
Posture. Includes lying, sitting, standing, pelvic tilt.
Pain management. No.
Emotional factors. No

Light Duties Program
None.

Evaluation Studies
None.

Monitoring of Injuries
Yes.

Self-Reported Strengths of Program
Orientation creates awareness. In-service keeps awareness up. In-service allows for discussion of techniques.

Self-Suggested Areas Needing Improvement
Need good audio-visuals.

Advice to Other Programs
Lay out objectives. Fit into team concept. Need to sell to management and workers.

Pamphlets and Booklets
Care of the Back (Lippincourt, 1976).

Major Resources
Personal experience and education.
How to Treat Your Own Back (MacKenzie, 1980).
A Textbook of Orthopaedic Medicine (Cyriax, 1978).

ORGANIZATION	Queen Elizabeth II Hospital Postal Bag 2600 10409 - 98 St. Grande Prairie, Alberta T8V 2E8
Contact Person	Janet Riley, Director of Physiotherapy.
Telephone	532-7711
Industry	Health Care
Type of Program	Consists of one educational package given both in the hospital and in the community. At the hospital the general program is given at orientation and further body mechanics is given in nursing in-service.
Frequency	Orientation.
Duration	One and one quarter hours.
Target Groups	All hospital employees (e.g., nurses, nursing aides, dieticians, maintenance workers). Upon request it has been given to outside industry.
Special Emphasis for Specific Target Groups	Only in terms of nursing in-service.
Roles/Responsibilities	*Employer.* Supplies time of workers and instructors. Also, consulted physiotherapists in planning of new hospital. *Workers.* Mandatory attendance. *Union.* None. *Health care professionals.* Delivered by physiotherapists. *Safety professionals.* None. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: Lecture, video, demonstration. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, overheads. *Promotion of warm-up.* No. *Promotion of physical fitness.* No.

Ergonomic design of workplaces. Yes, physiotherapists were consulted in planning new hospital particularly in regard to bed heights, toilet heights, etc.

Promotion of use of lifting devices. Yes, both in orientation and in in-service.

Pre-placement screening. No, not in terms of specific concern for backs.

Administrative guidelines (weight, size of objects to be lifted). No.

Posture. Includes: lying, sitting, standing, pelvic tilt.

Pain management. No.

Emotional factors. No

Light Duties Program — No.

Evaluation Studies — None.

Monitoring of Injuries — Yes.

Self-Reported Strengths of Program

Program modified to fit group. Size of groups make it easy to discuss particular problems. Physiotherapists are involved in treatment and prevention.

Self-Suggested Areas Needing Improvement

Need more time. Should have more practice and participation by workers. Should be geared more for specific jobs.

Advice to Other Programs

Use experience of others in field, particularly physiotherapists. Screen literature carefully as much of it is outdated.

Films — *Balance in Lifting (Queen Elizabeth Hospital).*

Major Resources — Experience and education in field.
Body Mechanics and Safe Transfer Techniques ((Millen, 1978).

ORGANIZATION	Red Deer Regional Hospital Centre 3942 - 50A Ave. Red Deer, Alberta T4N 4E7
Contact Person	Marg Musa, Employee Health Coordinator.
Telephone	343-4422
Industry	Health Care
Type of Program	Educational package.
Frequency	Currently on first time through departments.
Duration	One hour.
Target Groups	All employees (e.g., institutional aides, nurses, maintenance workers, dieticians).
Special Emphasis for Specific Target Groups	It will vary depending how much lifting target group does.
Roles/Responsibilities	*Employer.* Supplies time of instructor and some of the workers time. *Workers.* Voluntary or mandatory attendance depending upon department and floor. *Union.* None. *Health care professionals.* Physiotherapist and occupational therapist instruct the supervisor who delivers program. *Safety professionals.* None. *Others.* Coordinated by staff development.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: lecture, demonstration, participation. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, overheads, slides. *Promotion of warm-up.* No. *Promotion of physical fitness.* Includes emphasis on: back, abdomen. Format: Lecture, demonstration. There is also a voluntary physical fitness class which is not part of the back care program.

	Ergonomic design of workplaces. No, but accident investigations look at workplace design and recommend changes if appropriate. *Promotion of use of lifting devices.* Yes, includes demonstration. *Pre-placement screening.* Yes. *Administrative guidelines (weight, size of objects to be lifted).* No. *Posture.* Includes: lying, sitting, standing, pelvic tilt. *Pain management.* No. *Emotional factors.* No
Light Duties Program	No official program but light duties may be available in some departments.
Evaluation Studies	None.
Monitoring of Injuries	Yes.
Self-Reported Strengths of Program	Supervisor involvement as instructors means that supervisors are educated and can monitor behavior and provide follow-up.
Self-Suggested Areas Needing Improvement	Need more experience and more time.
Advice to Other Programs	Need management support.
Audio-Visual Resources	Slide-tapes (Glenrose Hospital, Edmonton).
Major Resources	*The Back Doctor (Hall, 1980).* Personal experience and education.

ORGANIZATION	Rockyview Hospital 7007 - 14 St. S.W. Calgary, Alberta T2V 1P9
Contact Person	Marilyn Cogger, Occupational Health Nurse.
Telephone	259-7511
Industry	Health Care
Type of Program	Consists of an educational package given at orientation, a special back care program for employees with problems which may be attended by other interested staff, presentations at in-service for nursing staff, and a body mechanics week.
Frequency	At orientation and ongoing program for back care. At this time there are plans to have body mechanics week annually.
Duration	Orientation is one hour for most employees, two hours for nurses.
Target Groups	All hospital employees (e.g., nurses, nursing aides, dieticians, maintenance workers, housekeeping workers, and radiological workers).
Special Emphasis for Specific Target Groups	Yes, orientation for nurses is longer and includes more body mechanics.
Roles/Responsibilities	*Employer.* Supplies time of workers and instructors. *Workers.* Orientation is mandatory, other aspects may be voluntary. *Union.* None. *Health care professionals.* Delivered by in-service education instructors, occupational health nurse, physiotherapists, occupational therapists, and social workers. *Safety professionals.* Inspect equipment suspected of being at fault in accidents. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: lecture, demonstration, film, participation.

Anatomical structure of the body. Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, film, skeleton model.

Promotion of warm-up. No.

Promotion of physical fitness. Includes emphasis on: back, abdomen, leg, diet, aerobics. Format: Lecture, slides, demonstration. There have at times been voluntary fitness classes on site but they have been unrelated to the back program.

Ergonomic design of workplaces. Staff involved in the back program were extensively involved in planning relevant aspects of the new hospital such as chairs, benches, door design, and bathroom design.

Promotion of use of lifting devices. Yes, each hoist is demonstrated and new hoists are shown regularly on in-service basis.

Pre-placement screening. Yes, referral to medical specialist if indicated.

Administrative guidelines (weight, size of objects to be lifted). Not in a formal policy but people are instructed that even the strongest workers should not lift more than forty pounds.

Posture. Includes lying, sitting, standing, pelvic tilt.

Pain management. No.

Emotional factors. Yes, individualized to worker needs, (e.g., Social Work Department).

Light Duties Program No.

Evaluation Studies No formal studies.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program

High profile increases worker awareness. Program is ongoing. Multidisciplinary cooperation in the development and delivery of program.

Self-Suggested Areas Needing Improvement

Need to demonstrate cost-benefit to management.

Advice to Other Programs	Have a relatively standardized, packaged program. Demonstrate cost-effectiveness.
Films	*Balance in Lifting (Rockyview Hospital).*
Pamphlets and Booklets	Various handouts from Fitness Canada and the Canada Heart Foundation.
Major Resources	Experience and education in field. Alberta WCB.

ORGANIZATION	Fiberglas Canada Incorporated Box 595 Edmonton, Alberta T5J 2L1
Contact Person	Pat Ness, Occupational Health Nurse
Telephone	467-8851
Industry	Fiberglas products manufacturing.
Type of Program	The back injury prevention program currently is very much reduced due to layoffs. The program was quite extensive in the past and the current nurse would like to eventually see much of it reinstated along with an evaluation. The following is a description of the extensive (former) program. It is of some interest in that it is a program purchased from the Back Care Centre.
Frequency	Orientation, ongoing.
Duration	Two hour group orientation, one hour group follow-up and considerable one-to-one counselling by nurse.
Target Groups	All employees (e.g., line workers, foremen, office staff).
Special Emphasis for Specific Target Groups	Yes, for instance, seating changes for secretarial staff.
Roles/Responsibilities	*Employer.* Supplied package and instructor's and workers' time. *Workers.* Voluntary attendance at program. *Union.* None. *Medical professionals.* Physiotherapist and physician from Back Care Centre involved in implementation, occupational health nurse and physician involved in delivery. *Safety professionals.* None. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: lecture, film, slide-tape, poster, buttons, demonstration, participation, booklet.

Anatomical structure of the body. Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, model, slide-tape, film, booklet.

Promotion of warm-up. No.

Promotion of physical fitness. Includes emphasis on: back, abdomen. Format: Counselling, film, demonstration, and back-fitness test. Employees called back to see if fitness has improved.

Ergonomic design of workplaces. Yes, to a small extent, (e.g., adding new chairs for secretaries).

Promotion of use of lifting devices. No, not as part of the back program although lifting devices are used.

Pre-placement screening. Yes, tested on back-fitness, given exercises and called back to re-test.

Administrative guidelines (weight, size of objects to be lifted). No.

Posture. Includes lying, sitting, standing, pelvic tilt.

Pain management. Yes

Emotional factors. No

Light Duties Program To a small extent.

Evaluation Studies None.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program

Ongoing. Includes one to one counselling.

Self-Suggested Areas Needing Improvement

Reduce amount of one to one counselling to increase cost-effectiveness. Make sure postures taught can be easily learned and used in working situation. Include preventive physiotherapy.

Advice to Other Programs

Keep education periods short and interesting. Have on-going program. Include demonstrations and participations. Conduct on company time.

Films Used *The Working Back: Parts I and II.*

Other Audio-Visual Slide-tape (Back Care Centre).

Pamphlets, Booklets	*The Working Back (Back Care Centre).*
Major Resources	Program of the Back Care Centre.

ORGANIZATION	Stelco Incorporated Box 2348 Edmonton, Alberta T5J 2R3
Contact Person	Janis Koehler, Occupational Health Nurse
Telephone	468-1133
Industry	Steel manufacturing.
Type of Program	Educational package along with exercises to reduce pain and condition back.
Frequency	As required.
Duration	One hour.
Target Groups	Workers reporting back pain. Eventually want to expand to include all workers.
Special Emphasis for Specific Target Groups	No.
Roles/Responsibilities	*Employer.* Supplies time of worker and instructor. *Workers.* Voluntary attendance. *Union.* None. *Health care professionals.* Taught by occupational health nurse, developed by occupational health nurse, physiotherapist and physician. Physician may screen participants. *Safety professionals.* Investigates precipitating incidents. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen, group lifting. Format: lecture, pamphlets, model, demonstration, participation. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, diagrams. *Promotion of warm-up.* Yes, in so far as useful exercises are demonstrated. *Promotion of physical fitness.* Includes emphasis on: back, abdomen, diet. Format: Lecture, demonstrations, participation.

Ergonomic design of workplaces. No, but accident investigations look at workplace design and recommend changes if appropriate.
Promotion of use of lifting devices. No, not as part of the back program although lifting devices are used.
Pre-placement screening. Yes, but not really as part of back prevention program.
Administrative guidelines (weight, size of objects to be lifted). No.
Posture. Includes lying, sitting, standing, pelvic tilt.
Pain management. Yes, includes heat packs, extension exercises and advice on daily living.
Emotional factors. No

Light Duties Program Yes.

Evaluation Studies None.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program
Enthusiastic instructor. Good exercises. Worker participation.

Self-Suggested Areas Needing Improvement
Need more time. Need evaluation.

Advice to Other Programs
Identify problem. Involve community. Stress lifting correctly.

Major Resources *How to Treat Your Own Back (MacKenzie, 1980).*

ORGANIZATION	Luscar Sterco P.O. Box 5000 Edson, Alberta TOE OPO
Contact Person	Pat Bayliss, Occupational Health Nurse.
Telephone	794-3790
Industry	Coal Mining
Type of Program	Occasional Educational presentations at the monthly safety meetings.
Frequency	Twice per year.
Duration	One half hour.
Target Groups	All workers involved with physical operations of the mine (e.g., labourers, technicians, mechanics, welders, machine operators).
Special Emphasis for Specific Target Groups	No.
Roles/Responsibilities	*Employer.* Supplies instructors and workers time. *Workers.* Mandatory attendance. *Union.* None. *Health care professionals.* Presented by occupational health nurse. *Safety professionals.* Present films. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: Counselling, film. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Film. *Promotion of warm-up.* No. *Promotion of physical fitness.* Includes emphasis on: back, abdomen, legs. Format: Film in safety meetings, handouts and demonstrations for people returning from injury. *Ergonomic design of workplaces.* No, but accident investigations look at workplace design and recommend changes if appropriate.

	Promotion of use of lifting devices. Yes. *Pre-placement screening.* Yes. *Administrative guidelines (weight, size of objects to be lifted).* No. *Posture.* Includes lying, sitting, standing, pelvic tilt. *Pain management.* No. *Emotional factors.* No.
Light Duties Program	Depends on work area and availability.
Evaluation Studies	None.
Monitoring of Injuries	Yes.
Self-Reported Strengths of Program	Presentation increases awareness.
Self-Suggested Areas Needing Improvement	Need more time.
Films	*The Working Back: Parts I and II.*
Pamphlets and Booklets	Exercise Handout (Fitness Canada).
Major Resources	Occupational Health and Safety Division films.

ORGANIZATION	Procter and Gamble Cellulose Postal Bag 1020 Grande Prairie, Alberta T8V 3A9
Contact Person	K.J. Thors, Occupational Health Nurse.
Telephone	539-8500
Industry	Forestry and bleached kraft pulp.
Type of Program	The back injury prevention program consists of one educational package given to the various areas in the business. The physiotherapist from the hospital has occasionally been a guest speaker.
Frequency	Aims at semi-annual presentation.
Duration	One and one quarter hours.
Target Groups	All at risk workers, including trades and labourers.
Special Emphasis for Specific Target Groups	No.
Roles/Responsibilities	*Employer.* Supplies time of workers and instructors. *Workers.* Voluntary attendance. *Union.* None. *Health care professionals.* Delivered by occupational health nurse, industrial hygienist, and guest physiotherapist. *Safety professionals.* Help in presentation. *Others.* Management sometimes included in presentation.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: Lecture, films, overheads, demonstration. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, films, overheads, skeleton, handout. *Promotion of warm-up.* Started since April, 1983.

Promotion of physical fitness. Not as part of regular program but back exercises are supplied to people who have a problem. In the health screening of workers diet will sometimes be mentioned.
Ergonomic design of workplaces. No, but accident investigations look at workplace design and recommend changes if appropriate.
Promotion of use of lifting devices. Yes, use of lifting devices is discussed in the program.
Pre-placement screening. Yes.
Administrative guidelines (weight, size of objects to be lifted). No.
Posture. Includes: lying, sitting, standing, pelvic tilt.
Pain management. No.
Emotional factors. No.

Light Duties Program Yes, work may be restricted according to physicians' recommendations.

Evaluation Studies None.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program
Availability increases awareness. Management support. Done in fairly small units.

Self-Suggested Areas Needing Improvement
Do more frequently. Present to even smaller units.

Advice to Other Programs
Have a relatively standardized, packaged program. Obtain management support for program.

Films Various films from OHSD library and USA head office.

Pamphlets and Booklets *You and Your Back, (Scriptograph).*
Back Owner's manual. (PAS Publishing, 1977).

Major Resources Experience and education in field.. Physiotherapist.
Back Owner's manual (PAS Publishing, 1977).

ORGANIZATION	Amoco Canada Petroleum Company Ltd. Amoco Canada Building 444 - 7th Avenue S.W. Calgary, Alberta T2P 0Y2
Contact Person	J.W. Pace, Safety Supervisor
Telephone	233-1313
Industry	Oil industry
Type of Program	Educational package (related to an overall safety program).
Frequency	Yearly
Duration	One hour
Target Groups	Hourly rate workers in oil fields and gas processing plants.
Special Emphasis for Specific Target Groups	No
Roles/Responsibilities	*Government* Information obtained from British Columbia WCB. *Employer.* Provides material and instructor and company time. *Workers.* Mandatory attendance at program. *Union.* None. *Health care professionals.* None. *Safety professionals.* Serve as instructors. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen, group lifting. Format: lecture, film, demonstration, booklet, slides. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: lecture, film, slides, booklet. *Promotion of warm-up.* No. *Promotion of physical fitness.* No. *Ergonomic design of workplaces.* Not as part of educational package but emphasize use of hoists and lifts on the job.

	Promotion of use of lifting devices. Yes. Use of hoists and lifts is emphasized on the job. *Pre-placement screening.* Yes. *Administrative guidelines (weight, size of objects to be lifted).* No. *Posture.* Includes: lying, sitting, standing, pelvic tilt. *Pain management.* No *Emotional factors.* No
Light Duties Program	Possibly, depends on availability of alternative work.
Evaluation Studies	None.
Monitoring of Injuries	Yes.
Self-Reported Strengths of Program	Lifting devices available. Education offered.
Self-Suggested Areas Needing Improvement	More good audio-visuals needed.
Advice to Other Programs	Be sure people are physically capable. Show and teach on an on-going basis.
Films Used	*Your Back Can Crack (AMOCO film).* *Industrial Weightlifter.* *A New Way to Lift.*
Other Audio-Visual	AMOCO slide show.
Pamphlets, Booklets	*Back Talk (British Columbia WCB).*
Major Resources	British Columbia WCB.

ORGANIZATION

Esso Resources Canada Limited
Esso Plaza
237 - 4th Avenue, S.W.
Calgary, Alberta T2P OH6

Contact Person

Andy Madsen, Safety & Training Coordinator
Production Operations

Telephone

237-3737

Industry

Oil industry.

Type of Program

Educational package. The package consists of three basic units: 1. Personal Back Strength and Fitness, 2. Manual Lifting and Handling Techniques, 3. Workplace Design and Hazard Recognition. Workers and supervisors deliver the program. It was developed in conjunction with Dr. D. Imrie of the Back Care Centre and thus may be of particular interest.

Frequency

Aim for annual presentation of all three sections.

Duration

About one to two hours per section.

Target Groups

All production operations including field office personnel, plant operators, service rig operators and mechanics.

Special Emphasis for Specific Target Groups

Yes, the instructor tries to gear program to specific target group.

Roles/Responsibilities

Employer. Supplies time of instructors, workers, and incentives.
Workers. Mandatory attendance.
Union. None.
Health care professionals. Involved in periodic company medicals.
Safety professionals. Involved in teaching instructors.
Others. Field people such as mechanics serve as instructors.

Content

Techniques of lifting. Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: Lecture, demonstration, film.

	Anatomical structure of the body. Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, film. *Promotion of warm-up.* No. *Promotion of physical fitness.* Includes emphasis on: back, abdomen, legs, diet. Format: fitness test, lecture, demonstration, booklets. *Ergonomic design of workplaces.* Not as part of the program but the employee is taught to recognize hazards in the workplace which stress the back and how to interact more effectively and efficiently with his environment. *Promotion of use of lifting devices.* Yes. *Pre-placement screening.* Yes. *Administrative guidelines (weight, size of objects to be lifted).* Containers marked with their weights. Single workers are not to lift more than 50 lbs. *Posture.* Includes: lying, sitting, standing, pelvic tilt. *Pain management.* No. *Emotional factors.* No.
Light Duties Program	Put restrictions on work in line with physician's recommendations.
Evaluation Studies	None.
Monitoring of Injuries	Yes.
Self-Reported Strengths of Program	Incentive program. People have been made aware of the need for the program. Workers serve as instructors.
Self-Suggested Areas Needing Improvement	If it were a factory setting participatory exercise classes would be useful.
Advice to Other Programs	Educate management as to the extent of the problem and resources required for the program. Important to have follow-up presentation.
Films	*The Working Back: Parts I and II.* *Bend Your Knees.*

Pamphlets and Booklets	*The Working Back (Back Care Centre).* *The Lifting Back (Back Care Centre).* *Back Fitness Score Card (Back Care Centre).*
Major Resources	Back Care Centre.

ORGANIZATION	Esso Resources Canada Limited Esso Plaza 237 - 4th Avenue, S.W. Calgary, Alberta T2P OH6
Contact Person	Joey Stewart, Senior Occupational Health Nurse.
Telephone	237-3737
Industry	Oil industry.
Type of Program	This back injury prevention program consists of an educational package given to employees throughout the province, upon request. It is less elaborate than the other program used by Esso.
Frequency	Upon request.
Duration	One hour.
Target Groups	Any group requesting the program, (e.g., the Exploration Department office workers, loading dock workers, field workers, geologists and geophysicists have all had the program).
Special Emphasis for Specific Target Groups	No.
Roles/Responsibilities	*Employer.* Supplies time of instructors, workers. *Workers.* Mandatory attendance. *Union.* None. *Health care professionals.* Delivered by occupational health nurses. *Safety professionals.* None. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: Lecture, booklet, participation, demonstration. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, overheads, booklet. *Promotion of warm-up.* No.

Promotion of physical fitness. Includes emphasis on: diet, back, legs, abdomen. Format: lecture.

Ergonomic design of workplaces. Only to the extent that NIOSH material is presented but accident investigations look at workplace design and recommend changes if appropriate.

Promotion of use of lifting devices. Not so far. Target groups are not involved in heavy labour.

Pre-placement screening. Not specifically in terms of the back education program.

Administrative guidelines (weight, size of objects to be lifted). Only to the extent that the NIOSH guidelines are discussed.

Posture. Includes: lying, sitting, standing, pelvic tilt.

Pain management. No.

Emotional factors. No.

Light Duties Program No.

Evaluation Studies None.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program

Includes participation. Relaxed atmosphere. Looks at the specific worksite.

Self-Suggested Areas Needing Improvement

More audio-visuals. Need an evaluation.

Advice to Other Programs

Share resources between programs. Have feedback between programs. Use follow-up reminders such as posters.

Pamphlets and Booklets *Back Talk (British Columbia, WCB).*
Don't Strain Yourself.
Prevent Back Injuries.

Major Resources *Workers Guide to Manual Lifting (NIOSH, 1982).*
The Back Doctor (Hall, 1980).
Back Injury Prevention Manual (Back Care Centre).

ORGANIZATION	Mobil Oil Box 800 Calgary, Alberta T2P 2J5
Contact Person	Irene Vanover, Occupational Health Nurse.
Telephone	268-7439
Industry	Oil industry.
Type of Program	Educational package.
Frequency	Upon request or by need, approximately yearly.
Duration	Eight one-hour sessions.
Target Groups	All types of workers (e.g., field workers to salaried office workers).
Special Emphasis for Specific Target Groups	Yes, try to gear to type of worker.
Roles/Responsibilities	*Employer.* Supplies resources, instructors time and some of the worker time. *Workers.* Mandatory or voluntary attendance at program. *Union.* None. *Health care professionals.* Coordinated by occupational health nurse, delivered by nurse. Physiotherapist was involved in the development. *Safety professionals.* None. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: Lecture, slides, demonstration, participation. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, slides. *Promotion of warm-up.* Yes, there is a demonstration of warm-up exercises including worker participation. *Promotion of physical fitness.* Includes emphasis on: diet, back, aerobics, abdomen. There is an assessment of

abdominal strength. Format: lecture, handouts, demonstration, fitness assessment. (There is also a physical fitness program at Mobil not officially attached to the back injury prevention program).

Ergonomic design of workplaces. Yes, the instructor may suggest changes to the worksite that is being visited. As with other industries, safety investigation of accidents may lead to job re-design.

Promotion of use of lifting devices. Yes.

Pre-placement screening. Yes, but with no particular emphasis on the back.

Administrative guidelines (weight, size of objects to be lifted). No, except in terms of light duty for specific workers.

Posture. Includes: lying, sitting, standing, pelvic tilt.

Pain management. Briefly.

Emotional factors. Yes.

Light Duties Program Yes, but there is no formal policy or classification of duties.

Evaluation Studies No, except for the workers' perceptions of the usefulness of the material.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program

Worker participation. Wholistic approach emphasizes lifestyle and attitude. Emphasizes pain management. Visits on-site.

Self-Suggested Areas Needing Improvement

Need more frequent presentation.

Advice to Other Programs

Seek advice of experts (e.g., physiotherapist).

Pamphlets and Booklets *Back Owner's Manual (PAS Publishing, 1977).*

Basics for Backs: Managing Your Low Back Pain (Consultants to Mobil).

Major Resources Education and experience in field, especially physiotherapist and fitness director.

The Back Doctor, (Hall, 1980).

ORGANIZATION	Nova Corporation 12th Floor 9888 Jasper Ave. Edmonton, Alberta
Contact Person	Maxine Imbeau, Senior Occupational Health Nurse.
Telephone	423-6111
Industry	Oil industry.
Type of Program	Educational package.
Frequency	Yearly.
Duration	One hour.
Target Groups	All Nova workers exposed to handling materials (e.g., maintenance, oil field workers, administrative services, mailroom workers).
Special Emphasis for Specific Target Groups	No.
Roles/Responsibilities	*Employer.* Supplies time of instructors and workers. *Workers.* Mandatory attendance at program. *Union.* None. *Health care professionals.* Delivered by occupational health nurses. *Safety professionals.* Delivered at safety meetings. *Others.* Used Alberta WCB program in developing own program. Also use WCB statistics in program.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, role of abdomen. Format: Lecture, film, model, demonstration. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, overheads. *Promotion of warm-up.* No. *Promotion of physical fitness.* Includes emphasis on: diet, back, abdomen. Format: lecture, film, handouts. (There is also a

separate physical fitness program which is part of a lifestyles program. The programs do coordinate activities to some extent).

Ergonomic design of workplaces. No, but accident investigations look at workplace design and recommend changes if appropriate.

Promotion of use of lifting devices. Yes.

Pre-placement screening. Yes.

Administrative guidelines (weight, size of objects to be lifted). No, except in case of specific people with history of problems.

Posture. Includes: lying, sitting, standing, pelvic tilt.

Pain management. No.

Emotional factors. No.

Light Duties Program Yes, might modify workplace or place restrictions on what person can do.

Evaluation Studies None.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program

Created employee awareness. Compared Nova's record with overall WCB statistics. Visit worksites for program. Occupational Health Nurse involvement increases worker involvement.

Self-Suggested Areas Needing Improvement

Should have more practice and participation by workers.

Films

Bend Your Knees.
The Working Back: Part I.

Pamphlets and Booklets

Back Talk (British Columbia, WCB).
Care of the Back (Lippincourt, 1976 Ed).

Major Resources Alberta WCB.

ORGANIZATION	Independent Therapists Limited 6005 - 103 Street Edmonton, Alberta T6H 2H3
Contact Person	Susan Muirhead, Physiotherapist, Project Consultant.
Telephone	438-1326
Industry	Consulting.
Type of Program	Educational package. Instructors plan to inspect the worksite in order to understand the ergonomic aspects of the job in future.
Frequency	Upon request.
Duration	(Under review) Approximately 1 hour per session. Four sessions and one review visit. Length of presentation is flexible.
Target Groups	Various industries including factory workers, construction and LRT workers.
Special Emphasis for Specific Target Groups	Instructor will inspect worksite to tailor education to specific needs.
Roles/Responsibilities	*Employer.* Pays for consultant. *Workers.* Attendance at program. *Union.* None. *Health care professionals.* Physiotherapist and occupational therapist serve as instructors. *Safety professionals.* None. *Others.* None.
Content	*Techniques of lifting.* Includes: straight back, bent knees, load close to body, pelvic tilt, two-person lifts, role of abdomen. Format: Lecture, visual aids, demonstration, participation. *Anatomical structure of the body.* Includes: spine, muscles, ligaments, potential damage, how damage occurs. Format: Lecture, spine, model, visual aids. *Promotion of warm-up.* No.

Promotion of physical fitness. Includes emphasis on: back, abdomen, legs, aerobics, diet. Format: lecture, demonstration, handouts, participation, fitness information.

Ergonomic design of workplaces. This will be included in future programs.

Promotion of use of lifting devices. Yes, includes discussion of what is available, problems with it, and how it can be used..

Pre-placement screening. No.

Administrative guidelines (weight, size of objects to be lifted). No, some suggestions but no guidelines per se.

Posture. Includes: lying, sitting, standing, pelvic tilt.

Pain management. No.

Emotional factors. No.

Light Duties Program None, but one under consideration.

Evaluation Studies None.

Monitoring of Injuries Yes.

Self-Reported Strengths of Program

Expertise in muscle functioning and body mechanics. Proposed program will include on-site assessment and ongoing education.

Self-Suggested Areas Needing Improvement

Need evaluation of learning by workers and impact on injuries. Need updated audio-visuals.

Advice to Other Programs

Define objectives. Tailor program to each target group. Keep presentation brief to accommodate time restrictions. Break into talk session and participation session. Keep group physically comfortable and interested. Have input from workers. Have ongoing program.

Pamphlets and Booklets Under review.

Major Resources Personal experience and education.
The Back Doctor Hall, 1980).

B. BACK INJURY PREVENTION RESOURCES

The following lists of resources were compiled by Peter D. Holt based on information provided by program contracts and Workers' Health, Safety, and Compensation staff members, as well as correspondence with persons in other parts of Canada, the United States, and Europe involved in the back injury prevention or back care fields.

Inclusion in this listing does not constitute an endorsement by the Alberta Occupational Health and Safety Division. Prospective users are advised to use their own judgement to determine the appropriateness of particular resources to their programs.

Audiovisual Resources

Films available from the Occupational Health and Safety Division Film Library, 5th Floor Donsdale Place, 10709 Jasper Avenue, Edmonton, T5J 3N3. Contact Shelly Ray, 427-4671, for more information or film catalogues:

Bend Your Knees
I am Joe's Spine
The Industrial Weightlifter
Low Back Pain
Make Light of Lifting
Mind Your Back
A New Way to Lift
Oh! My Aching Back
The Working Back (Parts I and II)

Films available from other sources:

Anatomy of a Back Injury
Manual Lifting and Handling
Electrolab, P.O Box 320, Belleville, Ontario

Back at Work
Danger Zone - Your Back
Industrial Accident Prevention Association, 342 Wildcat Road, Downsview, Ontario M3J 2N3

Back at Work
How to Avoid Muscle Strains
Lifting, Man's Age - Old Problem
International Safety Academy Film Library, P.O. Box 76146, Los Angeles, California 90076

Balance in Lifting
Medical Media Centre, 67 Mount Avenue, Toronto, Ontario M6K 3E3

Get a Move On
Live Action Communications, 113 Humber Road, London, England 5E3 8BR

How to Prevent Lower Back Pain
Back Facts
International Telefilm, 47 Densley Avenue, Toronto, Ontario M6M 5A8

Working Back
Provincial Film Library, audio Visual Services Branch, Public Affairs Bureau, 11510 - Kingsway Avenue, Edmonton, Alberta T5G 2Y5

Canada Safety Council Catalogue of Educational Resources
Canada Safety council, 1765 St. Laurent Blvd., Ottawa, Canada K1G 3V4. (Also available through the Alberta Occupational Health and Safety Division Library).

Ontario Hospital Association Film Catalogue
Ontario Hospital Association, 150 Ferrand Drive, Don Mills, Ontario M3C 1H6. (Also available through the Alberta Occupational Health and Safety Library.

Slide-tapes:

Back Injury Prevention. Alberta Occupational Health and Safety Division (available through the Alberta Occupational Health and Safety Division Library).

Industrial Back Education Program. Ontario Workers' Compensation Board, 2 Bloor Street East, Toronto, Ontario M4W 3C3. The slide-tape show used as part of this program is designed for use with three booklets (see section entitled "Booklets, Pamphlets").

NOTE: The *Canada Safety Council Catalogue of Educational Resources* lists a number of other slide-tapes.

Booklets, Pamphlets

Single copies of the following booklets are available for examination at the Occupational Health and Safety Division Library, 5th Floor, Donsdale Place. Contact Keith McLaughlin or Helene Wickens, 427-3530, for more information:

**Anatomy (II)*. Ontario Workers' Compensation Board, 1982.

Back Grounder. Back Association of Canada, 1982. (Note: For use in schools).

Back Owner's Manual. PAS Publishing, 1981.

Back Talk. British Columbia Workers' Compensation Board, 1981.

Back to Basics. Back Association of Canada, 1982.

Care of the Back. J.B. Lippincourt Company, 1976.

Don't Strain Yourself. Alberta Workers' Health, Safety and Compensation, 1982 (reprinted with the permission of Taro Industries, Ltd.).

**Introduction (I)*. Ontario Workers' Compensation Board, 1982.

**Posture (III)*. Ontario Workers' Compensation Board, 1982.

You and Your Back. Scriptograph, 1982.

*The booklets from the Ontario Workers' Compensation board include questions and are used with the Ontario WCB slide-tape program.

Ergonomic Guidelines

Ayoub, M.A. Control of Manual lifting hazards: II Job redesign. Journal of Occupational Medicine, 1982, 24, 668-676.

National Institute for Occupational Safety and Health (NIOSH) Work Practices Guide for Manual Lifting. DHEW (NIOSH) Publication No. 81-122, 1981.

United Auto Workers. Strains and Sprains: A Guide to Job Design. Detroit: International Union UAW, 1982.

Books and Articles on Transferring Patients

Lloyd, P., Osborne, C., Tariling C., and Troup, D. The Handling of Patients - A Guide for Nurse Management. Middlesex, Great Britain: Back Pain Association, 1981.

Millen, H.H. Body Mechanics and Safe Transfer Techniques. Detroit: Aronson Printing, 1978.

Rantz, M.F. and Courtail, P. Lifting, Moving and Transferring Patients - A Manual. New York: C.V. Mosky and Company, 1981.

Uroservicn, P (Ed.) Providing Early Mobility. Horshom, Pennsylvania: Nursing 80 Books International Communications, Inc., 1980.

Wright, B. Lifting and moving patients, I: An investigation and commentary. Nursing Times, 1981, 1962 - 1965.

Wright, B. Lifting and moving patients, II: Training and management. Nursing Times, 1981, 2025 - 2028.

Organizations and Individuals Involved in Ergonomics Research or Ergonomics - Based Back Injury Prevention Programs

Dr. D.B. Chaffin
Professor and Director
University of Michigan
Occupational Health and Safety Engineering Program
2254 G.G. Brown Laboratory
Ann Arbor, Michigan 48109

Donald F. Jones
Dynacopics, Inc.
P.O. Box 60
Bayshore Village RR#3
Brechin, Ontario LOK 1BO

Dr. S. Kumar
Department of Rehabilitative Medicine
University of Alberta
Edmonton, Alberta T6G 2E9

Health and Safety Executive
25 Chapel Street
London, Great Britain NW1 5DT

Human Systems Incorporated
Innovation Place
415 Phillip Street
Waterloo, Ontario N2L 3X2

Industrial Accident Prevention Association
2 Bloor Street East
Toronto, Ontario M4W 3C2

National Institute for Occupational Health and Safety
Division of Safety Research
944 Chestnut Ridge Road
Morgantown, West Virginia 26505

Ontario Ministry of Labour
Safety Studies Service
Occupational Health and Safety Division
400 University Avenue
Toronto, Ontario M7A 1T7

Dr. D.A. Stubbs
Materials Handling Research Unit
University of Surrey
Guildford Surrey, Great Britain GU2 5XH

Dr. J.D.G. Troup
University Department of
Orthopaedic and Accident Surgery
Royal Liverpool Hospital
Prescot Street
P.O. Box 147
Liverpool, Great Britain L69 3BX

Organizations Involved in Preplacement Screening

3S Fitness Group
c/o Gordon W. Stewart
P.O. Box 744
Ganges, British Columbia V0S 1E0

Leaside Medical Associates
Back Care Centre
214 Laird Drive
Toronto, Ontario M4E 3W4

Selected Employer Physical Fitness Programs in Alberta

In compiling information on back injury prevention programs in Alberta, a number of companies which have planned or implemented physical fitness programs came to the attention of the interviewer (Peter D. Holt). These are listed below. The programs generally include voluntary fitness classes and educational/awareness components. None are specifically aimed at preventing back problems although some have indicated that their programs do or will tie in with back care programs. The programs differ as to whether or not the classes are conducted on company time and whether or not the company supplies a fitness centre. None have been implemented for a long enough time to have been evaluated from a cost-benefit perspective.

NOTE: The following does not constitute a complete listing of all employer - sponsored physical fitness programs in Alberta.

Calgary Herald Box 2400 Station 19 Calgary, Alberta T2P 0W8	Contact: Connie Lazor, 235 - 7110
Esso Resources Esso Plaza Fitness Centre 237 - 4th Avenue S.W. Calgary, Alberta T2P 0H6	Contact: Paul Youldon, Manager of Fitness Program 237-4600
Mobil Oil Box 800 Calgary, Alberta T2P 2J7	Contact: Pat Shelton or Irene Vanover, OHS Nurses, 268-7476
Nova Corporation 801 - 7th Avenue S.W. P.O. Box 2535, Station M Calgary, Alberta T2P 2N6	Contact: Janis Fearey Action Project Coordinator 290-6004

Petro Canada
P.O. Box 2844
Calgary, Alberta

Contact:
Gary Carp (IMPCO Fitness),
263-8334, or Dr. C.G. Hill
Medical Director, 296-8000

Shell Resources
P.O. Box 106
Station M
Calgary, Alberta T2P 2H5

Contact:
Dr. Gordon Stewart
(3S Fitness),
1-604-537-5992

Other Organizations Involved in Back Care/Back Injury Prevention

Back Care Association
111 Avenue Road
Concourse Level
Toronto, Ontario
M5R 3J8

Back Pain Association
Grundy House
31-33 Park Road
Teddington, Middlesex
Great Britain TW11 OAB

British Columbia
Workers' Compensation Board
6951 Westminster Highway
Richmond, British Columbia V7C 1C6

Canadian Back Education Units
Women's College Hospital
60 Grovesnor Street
Toronto, Ontario M5S 1B6

Commission de la sante et de
la securite du travail
1199 rue de Bleury
C.P. 6067, Succ. A
Montreal, Quebec H3C 4E2

(All materials in French)

Construction Safety Association of Ontario
74 Victoria Street
Toronto, Ontario M5C 2A4

Industrial Accident Prevention Association
2 Bloor Street East
Toronto, Ontario M4W 3C2

Leaside Medical Associates
Back Care Centre
214 Laird Drive
Toronto, Ontario M4E 3W4

Ontario Hospital Association
150 Ferrand Drive
Don Mills, Ontario M3C 1H6

Royal Society for the Prevention of Accidents
Cannon House
The Priory Queensway
Birmingham, Great Britain B4 6BS

Sports Physiotherapy Centre
1390 Taylor Avenue
Winnipeg, Manitoba R3M 3V8

Workers' Compensation Board of Ontario
2 Bloor Street East
Toronto, Ontario M4W 3C3

Other Resources Available Through the Occupational Health and Safety Library

Bibliographies

Brown, J.R. Manual Lifting and Handling: An annotated Bibliography. Labour Safety Council of Ontario.

Wyke, Barry A Back Pain Bibliography (Published on Behalf of the Back Pain Association). London: Lloyd-Lake, 1983.

Abstracts and Digests

Industrial Hygiene Digest
Medics Index
Safety Science Abstracts

Newsletters

Back to Back, Back Association of Canada.

Ergonomics References

Kvalseth, T.O. Ergonomics of Workstation Design Chatham, Kent: Butterworth, 1983.

McCormick, E.J., and Sanders, M.S. Human Factors in Engineering and Design. New York: McGraw Hill, 1982.

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